

CLAIMS

What is claimed is:

1. A system for monitoring conditions within a tire comprising;
a sensor assembly disposed within each tire of a motor vehicle,
a transmitter in communication with said sensor assembly to transmit signals
indicative of current tire conditions;
a remote transmitter for actuating a remote keyless entry system, said remote
transmitter emitting a signal to actuate a function of said keyless entry system;
a receiver assembly for receiving said signal indicative of said current tire
conditions and said single to actuate a function from said remote transmitter, said signal
indicative of said tire conditions is different than said signal to actuate a function of said
remote keyless entry system.
2. The system of claim 1, wherein said signal indicative of said current tire
conditions is a frequency shift keyed transmission.
3. The system of claim 1, wherein said signal to actuate a function of said
remote keyless entry system is an amplitude shift keyed transmission.
4. The system of claim 1, wherein said receiver assembly includes an
amplitude shift keyed receiver, and a frequency shift keyed receiver, said receivers
selectively engaged to receive incoming signals in response to a predetermined
triggering event.
5. The system of claim 4, wherein said predetermined triggering event is
the current speed of the motor vehicle.

6. The system of claim 5, wherein said amplitude shift keyed receiver is engaged to receive incoming signals for speeds below a predetermined speed threshold of said motor vehicle and said frequency shift keyed receiver is engaged to receive incoming signals for speeds above said predetermined speed threshold.

7. The system of claim 5, wherein said signal indicative of said tire conditions includes an amplitude shift keyed wake up signal, said amplitude shift keyed wake up single initiating a switch from said amplitude shift keyed receiver to said frequency shift keyed receiver.

8. The system of claim 1, wherein said transmitter sends said signal at predetermined intervals, said predetermined intervals varied in response to motor vehicle speed.

9. The system of claim 1, wherein said predetermined interval is greater at speeds above said predetermined speed threshold than below said predetermined speed threshold.

10. The system of claim 9, wherein said predetermined interval increases in response to variation of pressure within one of said tires.

11. The system of claim 1, wherein said signal indicative of said tire conditions includes a plurality of data frames sent at random time intervals to prevent repeated overlap of transmissions from two or more of said sensor assemblies.

12. The system of claim 11, wherein said random time interval is transmitted to said receiver assembly such that said receiver assembly anticipates subsequent data frames of said signal.

13. The system of claim 12, wherein said amplitude shift keyed receiver is engaged during said random time interval.

14. The system of claim 1, wherein said sensor assembly includes a valve stem pivotally mounted to said sensor assembly and lockable at a desired pivoted position.

15. The system of claim 1, wherein said sensor assembly includes a temperature sensor.

16. The system of claim 1, wherein said sensor assembly includes an accelerometer.

17. The system of claim 1, wherein said receiver assembly includes a learning mode for discerning between signals from sensor assemblies disposed on other motor vehicles; said learning mode compares an acceleration value obtained from said sensor assembly with a vehicle acceleration value to distinguish between sensor assemblies disposed on another motor vehicle.

18. The system of claim 1, where said receiver assembly includes a localization mode for discerning the specific position of the tire on the motor vehicle, said localization mode includes an external triggering source to initiate specific transmission from a specific sensor assembly associated with a specific location on said motor vehicle.

19. A receiver assembly for receiving signals indicative of tire conditions for a tire pressure monitoring system and signals initiating activation of a specific function for a remote keyless entry system comprising;

an amplitude shift keyed receiver;
a frequency shift keyed receiver;
said receivers selectively engaged to receive incoming signals in response to a triggering event.

20. The assembly of claim 19, wherein said triggering event is a predetermined speed of the motor vehicle.

21. The assembly of claim 19, wherein said tire pressure monitoring system includes a sensor assembly, said sensor assembly including a transmitter emitting the signal indicative of tire conditions, said signal is a frequency shift keyed transmission.

22. The assembly of claim 19, wherein said remote keyless entry system includes a remote transmitter, said remote transmitter emitting an amplitude shift keyed transmission.

23. The system of claim 19, wherein said amplitude shift keyed receiver is engaged to receive incoming signals for speeds below a predetermined speed threshold of said motor vehicle and said frequency shift keyed receiver is engaged to receive incoming signals for speeds above said predetermined speed threshold.

24. The system of claim 23, wherein said tire monitoring system emits a single indicative of tire conditions and includes an amplitude shift keyed wake up signal, said amplitude shift keyed wake up signal initiating a switch from said amplitude shift keyed receiver to said frequency shift keyed receiver.

25. A method of determining a position of sensor assemblies for a tire pressure monitoring system of a motor vehicle comprising the steps of:

- a. transmitting a signal indicative of tire acceleration to a receiver assembly;
- b. obtaining data indicative of motor vehicle speed from a vehicle system;
- c. comparing the signal indicative of tire acceleration with the data indicative of motor vehicle acceleration;
- d. recording the sensor assembly identification code in response to the signal indicative of tire acceleration being substantially equal to the data indicative of motor vehicle acceleration.

26. The method of claim 25, further including the step of relearning sensor assembly position in response to the motor vehicle remaining stationary for a predetermined period of time.

27. The method of claim 25, further including the step of recognizing a new sensor assembly in response to receiving a desired number of data indicative of tire acceleration that compare favorably with the acceleration data indicative of the speed of the motor vehicle.

28. The method of claim 25, further including the step of obtaining data indicative of a turn of the motor vehicle from a vehicle system, and correlating the data indicative of a turn of the motor vehicle to indicate the position of the sensor assembly on the motor vehicle.

29. The method of claim 25, further including the step of measuring signal strength to determine the position of said sensor assembly.

30. A method of preventing data transmission overlap between signals emitted from a tire pressure monitoring system and a remote keyless entry system, said method comprising the steps of;

- a. setting a receiver assembly including an amplitude shift keyed receiver and a frequency shift keyed receiver such that incoming transmissions are received by said amplitude shift keyed receiver;
- b. switching from said amplitude shift keyed receiver to said frequency shift receiver in response to a triggering event.

31. The method of claim 30, further including the steps of emitting a frequency shift keyed transmission from said tire pressure monitoring system, and emitting an amplitude shift keyed transmission from said remote keyless entry system.

32. The method of claim 30, wherein said triggering event is further defined as obtaining a vehicle speed above a predetermined threshold value.

33. The method of claim 30, wherein said trigger event is further defined as receiving an amplitude shift keyed wake up signal from the tire pressure monitoring system alerting the receiver assembly to a subsequent frequency shift keyed transmission.